

BISHOP CREEK HYDROELECTRIC SYSTEM, CONTROL STATION,
HYDROGRAPHER'S OFFICE
(BISHOP CREEK HYDROELECTRIC SYSTEM, CONTROL STATION,
BUILDING NO. 111)
BISHOP CREEK
BISHOP VICINITY
INYO COUNTY
CALIFORNIA

HAER No. CA-145-1-B

HAER
CAL
14-BISH,
2B-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
NATIONAL PARK SERVICE
WESTERN REGION
DEPARTMENT OF THE INTERIOR
SAN FRANCISCO, CALIFORNIA 94107

HISTORIC AMERICAN ENGINEERING RECORD

**BISHOP CREEK HYDROELECTRIC SYSTEM,
CONTROL STATION, HYDROGRAPHER'S OFFICE
(Building 111)**

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Location: Near Bishop Creek in Southeast 1/4 of Section 17, Township 7 South, Range 32 East, M.D.M, Inyo County, California (UTM Coordinates 11/368907/432939), in the eastern Sierra Nevada Mountain Range approximately 2.5 miles southwest of the town of Bishop, California, and 225 air miles due north of Los Angeles.

Date of Construction: c. 1916-1925, 1942, 1987

Builder: Unknown

Present Owner: Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, CA 91770

Original Use: Worker Cottage

Present Use: Hydrographer's Office

Significance: Building 111, Control Station, originally constructed as worker housing, has been greatly modified over the years for a variety of uses. It is now used as the hydrographer's office. Its significance derives from its contribution to an understanding of the historic character of the physical and social environment of the Control Station compound. The Bishop Creek System is considered significant for its role: (1) in the expansion of hydroelectric generation technology, (2) in the development of eastern California, and (3) in the development of long-distance power transmission and distribution.

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Environmental Affairs Division
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Date: December 19, 1994

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I. DESCRIPTION

Building 111 Control Station was originally constructed sometime between 1916 and 1925 as an employee residence. It was extensively modified in 1942 and converted into a military mess hall and barracks for United States Army Combat Service Group troops who were stationed at Bishop Creek to guard the power generating facilities from possible sabotage during World War II. Sometime before 1970 a portion of the 1940s addition was removed and the building was converted to a combination single-family employees' residence and test shop. In 1987 a carport was added to the south end of the building, the interior was extensively remodeled, and its use was converted to that of the hydrographer's office. Building 111 at Control Station is about 500 feet north of Plant No. 5. Control Station and Plant No. 5 are southwest of Plant No. 6 and northeast of Plant Nos. 2, 3 and 4. The Bishop Creek System is about five miles southwest of the town of Bishop, Inyo County, California. The five power plants in the system, located primarily along the south, middle, and north forks of Bishop Creek, are at varying elevations on the steep eastern slopes of the southern Sierra Nevada Mountain Range.

Building 111 is isolated on the opposite (west) side of the Control Station substation and control building complex from the other residential buildings. It is located on a flat site without any landscaping or yard. A new, low cinder block retaining wall runs along the east side of the building, separating it from the asphalt-paved parking lot of the new Control Building (constructed in 1994) (Photo 145-1-B-1). One mature tree is on the east side of building 111, and one mature and one smaller tree are on the west side (Photo 145-1-B-2). On the west side next to the building is a tall wood utility pole with a telecommunications antenna. North and south of the building are various power lines.

The building is a single-story, L-shaped plan (30 × 48 × 18 foot) structure. The long axis is orientated north/south and is characterized by an end-gabled asphalt shingle roof. Rafter ends are exposed. The exterior of the structure has been covered with asbestos siding. 1-light-over-1-light, double-hung windows are the original glazing type. These windows all have simple wood surrounds. Aluminum sliding-glass windows are used for several later additions. Small rectangular louvered vents are located high on both gable ends. "Swamp coolers" project from the east and south exterior walls. A small concrete porch at the north end of the building has a gabled-roof weather protection structure supported by two wooden posts (Photo 145-1-B-3). This same porch has a pair of iron-pipe railings. Concrete steps lead to a door on the east side of the building covered by weather protection structure with exposed rafter ends under the eaves and supported by two wooden posts (Photo 145-1-B-1). The building does not

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appear to have a true front side, although the west side, lacking any entrance, is clearly the back side.

A 12 × 24 foot shed-roofed addition on the west side (south end) of the main building probably dates to World War II; this addition forms the short end of the L (Photo 145-1-B-2). It has been extensively modified with aluminum sliding-glass windows. The original corner caps have been left in place while the remainder of the addition has been covered with asbestos siding. Like the main building, the roof's structural members on the addition are exposed below the eaves.

The carport extension on the south end carries the end-gable and the shed roof out an additional 16 feet (Photo 145-1-B-4). Like the main building and the shed addition, the carport has exposed roof beams below the eaves. It is supported on three wood posts.

The interior of Building 111 Control Station retains little of its original plan. Although no drawings of the original plot plan and later modifications exist, it appears probable that the south end of the building was intended to be the front, the back (north) room was bedrooms, and the front (south) room was divided into living, cooking, and bathroom spaces. After the post-World War II rebuild, the north end became the main residential entrance, and the structure was used as a combined residence and test shop. The test shop consisted of the shed addition and the two small rooms at the south end that were probably used for storage. The shop and storage rooms had their own entrances at the south end of the building. The 6 x 8.5 foot structure occupying the northwest corner between the shed addition and the main building is a bathroom that was probably part of the World War II modification (Photo 145-1-B-2). The 17 x 17.5 foot (northern) and the 17.5 x 20 foot (southern) main building rooms were further subdivided into bedrooms, kitchen, and living room before the 1987 modifications. The building has a compact plan with no halls or corridors joining the rooms which open directly one to another. The doors and windows are framed with simple, plain boards. The walls are plaster, sheet-rock, and wood-panel in the main building with simple baseboards and no cornice moldings. Floors are carpeted in the main building rooms, and bare concrete in the shed addition. Hardware is intact on original doors which are distinguished from later additions by inset panels.

The main entrance to the hydrographer's office is through a windowed door on the east side of the building (Photo 145-1-B-5). Two aluminum sliding-glass windows flank this door to the north. The ceiling is acoustical tile broken by an air-circulation vent and recessed florescent

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lighting. Opposite the entrance door, a solid door passes through a wood-paneled wall into the shed addition (Photo 145-1-B-6). At the northwest corner of this room a paneled door passes into the bathroom, and a solid door passes into the northern room (Photo 145-1-B-7). The bathroom (recently remodeled) contains a toilet, sink (Photo 145-1-B-8), and tiled showerstall (Photo 145-1-B-9) with a hot-water heater in the space between the showerstall and the door. A small light fixture above the sink and an aluminum sliding-glass window above the toilet light the bathroom.

Passing into the northern room of the main building, the back (south) wall is largely covered by two sets of built-in floor to ceiling wood cabinets; the eastern set consists of tall double doors topped by small double doors, the western set consists of tall double doors topped by small double doors with an additional small double door cabinet above the door into the southern main room (Photo 145-1-B-10). A remnant of the wall dividing the northern room in half is visible up the back wall and across the ceiling (Photo 145-1-B-10). The built-in cabinets are original and were probably bedroom closets. The storage cabinet between the eastern built-in cabinets and the divider wall remnant is a later addition. The ceiling and walls in this room are plaster. The ceiling is broken by an air circulation vent and suspended fluorescent lights. A solid door on the north wall passes outside (Photo 145-1-B-11). Adjacent to the east of this door is a small rectangular built-in electrical heating unit. Three original double-hung windows are present in this room (Photo 145-1-B-11 and Photo 145-1-B-12).

The door from the southern main building room enters the shed addition down a concrete step (Photo 145-1-B-13). Decorative accouterments are spare in this room and it retains much of the characteristics of a test-shop. Aluminum sliding-glass windows are present on the west and south walls and the room is lighted by suspended fluorescent fixtures (Photo 145-1-B-14). Three walls are covered with wood-panel; the fourth retains the asbestos siding of the exterior of the main building (Photo 145-1-B-15). Two tall free-standing multi-doored storage cabinets (one against the south wall and one against the west wall), and a free-standing metal work bench and shelving (against the east wall) provide storage (Photo 145-1-B-14 and Photo 145-1-B-16). A solid door on the south wall exits to the outside, and an original paneled door on the east wall at the top of a concrete step passes into a small (10 x 10 foot) storage room (Photo 145-1-B-15). A trap door in the storage room ceiling leads to the attic; a plywood peg-board adorns the north wall (Photo 145-1-B-17). The original double-hung window visible on the south building exterior (Photo 145-1-B-4) is boarded from the inside and obscured by shelving in the storage room.

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A small (11.5 x 10 foot) office occupies the area adjacent to the east of the storage room and south of the southern main building room. This office is accessed by way of a windowed door through the south wall exiting to the outside (Photo 145-1-B-18). A aluminum sliding-glass window on the east wall completes the fenestration in this room (Photo 145-1-B-19). The floor, ceiling, and wall treatments are identical to the southern main building room. Heating is provided by a small rectangular built-in electrical wall unit (Photo 145-1-B-19).

II. HISTORICAL CONTEXT

The Bishop Creek Hydroelectric System is significant in the history of hydroelectric power generation technology, the development of eastern California, and the development of long-distance power transmission and distribution. The Bishop Creek system is an early example of a high-head, impulse water wheel, high-voltage electric generation system. The system exhibits a high level of innovative planning, maximizing the production of energy by combining use of the steep slope of the eastern Sierra Nevada with specialized generation technology.

The first hydroelectric power generation along Bishop Creek was a small plant operated by the Bishop Light and Power Company. The plant, a Stanley polyphase generator (150 horsepower) driven by a 48-inch Pelton wheel, generated power for local use. The impetus for the development of the Bishop Creek system was the discovery of economic minerals in the Tonopah and Goldfield areas of Nevada. The local power companies in these areas generated electricity by burning fuels, an expensive and unreliable source of power for an industrial operation like mining.

Loren B. Curtis and Charles M. Hobbs arrived in the Tonopah and Goldfield areas in 1904 because of their interest in mining. Curtis and Hobbs recognized that the economic potential of mining in this area could not be tapped unless a reliable and inexpensive power source could be developed. Curtis, an engineer, decided that Bishop Creek in the eastern Sierra would be the best location for the production of hydroelectric power for the nearby Nevada mining areas. Hobbs, a banker and financier, obtained financial backing for the project, and then incorporated with his partner as the Nevada Power, Mining and Milling Company in December 24, 1904. Construction commenced in January 1905 on the first generating plant (Power Plant No. 4); nine months later, in September 1905, electricity was delivered to the Goldfield substation. Since Nevada Power, Mining and Milling had secured contracts for power delivery to the mining companies in Goldfield and Tonopah, there was a ready market

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for Bishop Creek electricity. The inexpensive power from Bishop Creek made it possible to mine economically in these areas, producing a new mining boom and a period of posterity in Nevada (Elliott 1984:210-215).

On January 5, 1907, the Nevada-California Power Company was incorporated as the successor to Nevada Power, Mining and Milling Company. In 1907, Nevada-California Power expanded Power Plant No. 4, and they purchased the capital stock of Hillside Water Company, thus permitting the construction of additional plants along Bishop Creek. In 1908, a fifth operating unit was installed at Power Plant No. 4 and construction was completed on Power Plant No. 2. Power Plant No. 5 was constructed in 1909, and South Lake was enlarged. After this expansion, the Bishop Creek System produced significantly more power than was needed by its current market, still primarily mining operations in Nevada.

In an attempt to expand the market for Bishop Creek power, the directors of Nevada-California Power Company incorporated the Southern Sierra Power Company as a subsidiary in 1911 with its main purpose being to service the power needs of southeast California.¹ The total output of the Bishop Creek plants was 12,500 kW in 1911 when construction began on a transmission line to San Bernardino where a steam plant was built. Power Plant No. 3 was completed in 1912, adding 6,000 kW to the system. During 1912 and 1913, the southern California system was expanded substantially, with the system's capacity increasing to 24,350 kW, when Power Plant No. 6 was completed in 1913. The Bishop Creek System was essentially complete with the five plants existing today in operation by the end of 1913.

Southern Sierra Power Company, which continued to expand by buying smaller power companies, grew to play a significant role in the development of southeastern California, particularly the Imperial Valley. In 1914, the longest power transmission line in the world (at the time) was completed, delivering power from Bishop Creek to the Imperial Valley. As a result of the electrical power now available, the population of the Imperial Valley grew from only 50 to over 65,000 in the next 20 years.

Nevada-California Power Company and Southern Sierra Power developed and operated the Bishop Creek plants as two separate, but associated, power companies. As two branches of a

¹The creation of Southern Sierra Power Company consolidated several associated companies, including the Nevada-California Power Company, the Bishop Light and Power Company, the Corona Gas and Electric Company, the Lytle Creek Power Company and the Hillside Water Company.

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larger power corporation, they initially produced power at slightly different voltages, which made it difficult to tie the two systems together.

Plant Nos. 2, 3 and 4 were operated by Nevada-California Power Company and they serviced the Nevada mining districts; Southern Sierras Power Company operated Plant Nos. 5 and 6 for delivering power to southern California. The Control Station regulated the distribution from the Southern Sierras Power Company part of the system. Building 111 at Control Station was originally constructed between 1919 and 1925 as a single-family residence for workers at Control Station. During World War II it was converted into a mess hall and barracks for United States troops stationed at Bishop Creek to guard the power generating facilities from possible sabotage. After the war it was converted again, this time into a combination single family worker residence and test shop. Further modification during the mid-1980s converted the building into the hydrographer's office.

During the 1920s, the power-generating system was "fine-tuned" to extract as much power as possible from the existing plants. Much of the company's resources at this time were used to market energy at the far reaches of the distribution network and to purchase other power companies. During the 1930s, there was only limited development in Bishop Creek because of the worldwide depression. Increased competition from rival companies producing cheaper energy on the Colorado River forced the Bishop Creek company during the 1930s to withdraw from the Imperial and Coachella valley markets. The Nevada-California Electric Corporation, formed as a holding company in 1914 for the companies associated with Southern Sierra Power Company, became an operating company in 1936 when the subsidiary companies were dissolved and the operating properties transferred to the parent company. In 1941, the company changed its name to California Electric Power Company (later known as Calelectric).

The properties of Calelectric were acquired by Southern California Edison Company (SCE) in 1964 through a merger consolidation. SCE is the present operator of the Bishop Creek plants. Since 1964, SCE's consolidation of operations and automation of the power plant equipment has resulted in the elimination of many of the on-site employees. During the 1970s, all the housing units at Plants Nos. 2, 3, and 5 were demolished, leaving structures only at Plant Nos. 4, 6 and the Control Station (near Plant No. 5).

III. SOURCES

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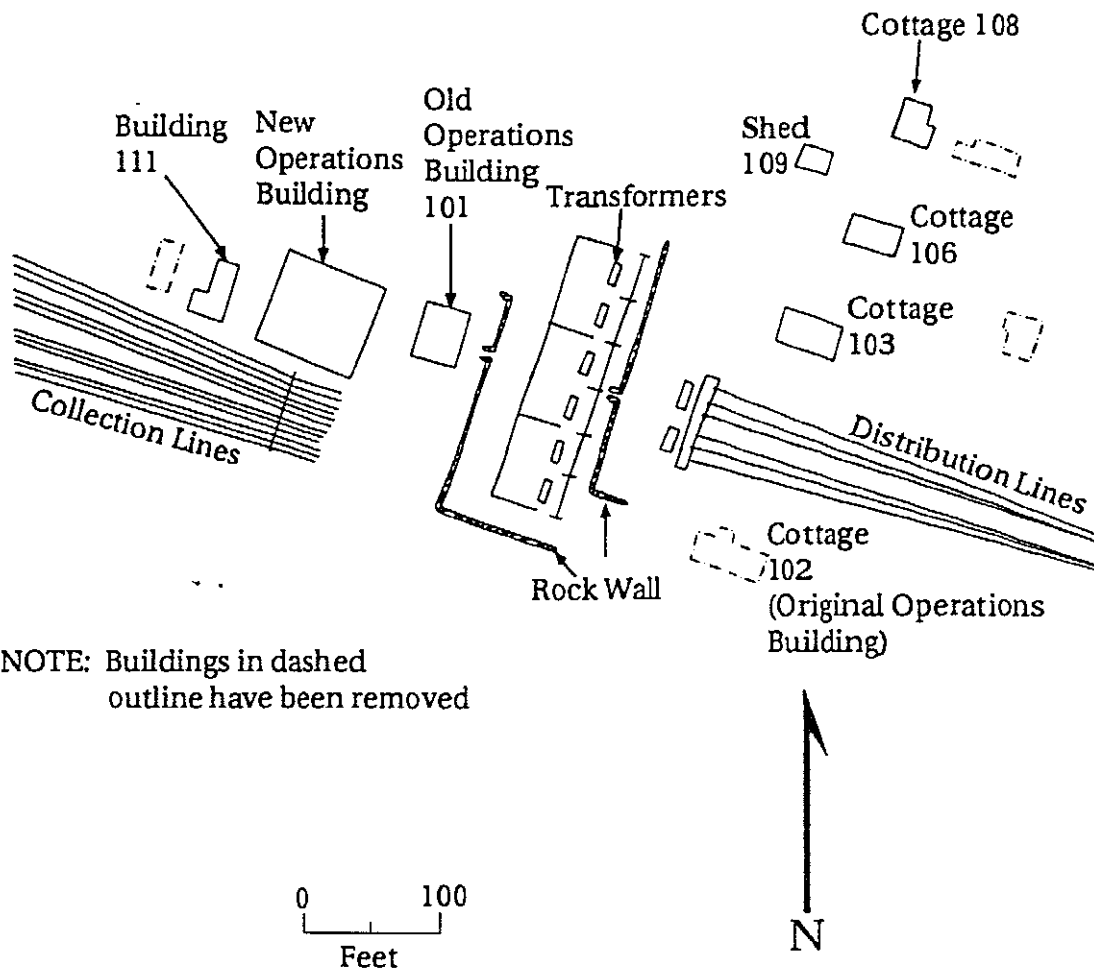
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IV. PROJECT INFORMATION

This Historic American Engineering Record documentation of Building 102 Control Station, a structure at the Control Station of the Bishop Creek Hydroelectric System, was undertaken because the building represents excess housing. SCE is continuing to automate the Bishop Creek power plants. The automation of the power plants has made it unnecessary to have on-site crews, thus, residential units like this house have become obsolete.

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